

Appln. No. Serial No. 09/786,138

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AMENDMENTS TO THE CLAIMS

The listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently amended) A computer-implemented compressed-code generating method that is used for compressing information, ~~on characters including letters, numbers, numerical data, sound and or images,~~ the method comprising:

a first step of obtaining first and second bit strings $\{y\}_1$ and $\{y\}_2$ respectively from a binary code bit string $\{y\}$, which represents ~~(where y is a binary code string consisting of 0 or 1)~~ of information to be compressed;

a second step of ~~obtaining~~ defining a quantized initial value $Y(0)$ by giving a binary weight to the first bit strings $\{y\}_1$;

a third step of obtaining an internal status $x(0)$ ~~that becomes an irrational value by giving~~ using the quantized initial value $Y(0)$ and n ~~to in a the right-hand side of an inverse conversion expression in-phase conversion quantization expression,~~ $x(0) = \{\sin \pi Y_n(0) / 2^{n+1}\}^2$ (where n is a quantized resolution of the first bit string);

a fourth step of ~~giving~~ substituting the obtained internal status $x(0)$ ~~to in a the right-hand side of an inverse calculation expression of a logistic map,~~ $x(t-1) = (1 \pm (1-x(t))^{1/2})/2$ (where t is a discrete time), and ~~further selectively giving selecting a sign of positive or negative in the right-hand side of the inverse calculation expression according to following a binary value of the second bit string $\{y\}_2$ to this right-hand side,~~ thereby ~~to obtaining~~ a past retroactive internal status, the fourth step being sequentially executed by the number of bits of the second strings $\{y\}_2$; and

a fifth step of generating a compressed code $Y(-\tau)$ by ~~giving using an a resultant~~ using the internal status $x(-\tau)$ ~~retroactive to the past obtained at the fourth step 4 and m to in a the~~ right-hand side of an in-phase conversion quantization expression, $Y(-\tau) = 2/\pi \times \arcsin(x(-$

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$\tau)^{1/2} \times 2^m$ (where m is a quantized resolution newly defined for the above n , and τ is a discrete time newly defined for the above t),

wherein a length of the compressed code $Y(-\tau)$ is less than a length of the bit string $\{y\}$.

2. (Currently amended) A computer-implemented compressed-code expanding method that is used for restoring and expanding a the compressed code $Y(-\tau)$ generated by using the compressed-code generating method recited in Claim 1, the method comprising:

~~an eleventh~~ a sixth step of obtaining ~~an~~ the internal status $x(-\tau)$ ~~that becomes an irrational number by giving~~ using the compressed code $Y(-\tau)$ and n ~~to in~~ in an inverse conversion expression of in-phase conversion quantization, $x(-\tau) = \{\sin \pi Y(-\tau) / 2^{n+1}\}^2$ (where n is a quantized resolution);

~~a twelfth~~ a seventh step of obtaining an internal status ~~toward the future by giving~~ using the internal status $x(-\tau)$ ~~to in~~ in a the right-hand side of forward calculation expressions of a logistic map

$$x(t+1) = 4x(t)\{1 - x(t)\} \quad \dots(1)$$

$$x(t) = x(t + 1) \quad \dots(2)$$

the ~~twelfth~~ seventh step being executed repeatedly up to an internal status $x(0)$;

~~a thirteenth~~ an eighth step of restoring and expanding the second bit string $\{y\}_2$ by sequentially ~~giving~~ using the internal status $x(t)$ ~~toward the future~~ obtained at the ~~twelfth~~ seventh step and m ~~to the~~ in a right-hand side of an in-phase conversion quantization expression, $Y(t) = 2/\pi \times \arcsin(x(t))^{1/2} \times 2^m$ (where m is a quantized resolution newly defined for the above n , and t is a discrete time newly defined for the above τ); and

~~a fourteenth~~ ninth step of restoring and expanding the first bit string $\{y\}_1$ by sequentially ~~giving~~ using the internal status $x(0)$ ~~toward the future~~ obtained at the ~~twelfth~~ seventh step and m ~~to in~~ in the right-hand side of the in-phase conversion quantization expression.

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3. (New) The computer-implemented compressed-code generating method of claim 1 wherein the sign of the right-hand side of the inverse calculation expression of the logistic map is positive when the value of the second bit string is 1 and negative when the value is 0.